## The Circle (Q 3, Paper 2)

2006
3 (a) The circle $C$ has equation $x^{2}+y^{2}=25$.
The line $L$ is a tangent to $C$ at the point $(-3,4)$.
(i) Verify that the point $(-3,4)$ is on $C$.
(ii) Find the slope of $L$.
(iii) Find the equation of $L$.
(iv) The line $T$ is another tangent to $C$ and is parallel to $L$.

Find the coordinates of the point at which $T$ touches $C$.
(b) The vertices of a right-angled triangle are $p(1,1), q(5,1)$ and $r(1,4)$.

The circle $K$ passes through the points $p, q$ and $r$.
(i) On a coordinate diagram, draw the triangle $p q r$.

Mark the point $c$, the centre of $K$, and draw $K$.
(ii) Find the equation of $K$.
(iii) Find the equation of the image of $K$ under the translation $(5,1) \rightarrow(1,4)$.

Answers
3 (a) (ii) $\frac{3}{4}$
(iii) $3 x-4 y+25=0$
(iv) $(3,-4)$
(b) (i)

(ii) $(x-3)^{2}+\left(y-\frac{5}{2}\right)^{2}=\frac{25}{4}$
(iii) $(x+1)^{2}+\left(y-\frac{11}{2}\right)^{2}=\frac{25}{4}$

